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ELECTRONIC CASH REGISTER

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ELECTRONIC CASH REGISTER

[Denshi shiki kinsen torokuki]

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Claims

1. An electronic cash register equipped with the following devices: an input device which enters various types of register information using key operations, an arithmetic/memory device which computes, sums up, and stores the above-mentioned register

information, a display device which indicates the above-mentioned register and arithmetic information, a printer which prints out the above-mentioned register and arithmetic information, and a magnetic-card processing device which reads out a code number from a magnetic card, which records at least the code number of a customer through a magnetic head so as to provide the above-mentioned printer the customer code number thus read out by the above-mentioned magnetic-card processing device.

2. An electronic cash register equipped with the following devices: an input device which enters various types of register information using key operations, an arithmetic/memory device which computes, sums up, and stores the above-mentioned register information, a display device which indicates the above-mentioned register and arithmetic information, a printer which prints out the above-mentioned register and arithmetic information, and a magnetic card processing device which reads out a code number and the cumulative sales from a magnetic card, which records at least a customer code number and the cumulative sales transacted for that customer up to the previous sales through a magnetic head so as to provide through the above-mentioned printer the customer number thus read out by the above-mentioned magnetic card processing device as well as to provide [the same information] to the above-mentioned arithmetic/memory device so it can store the cumulative sales, up to the previous sale, thus read out by the magnetic-card processing device and add new total sales to the previous cumulative sales, when new sales are transacted, so the newly obtained cumulative sales can be stored on the magnetic card.

3. An electronic cash register equipped with the following devices: an input device which enters various types of register information using key operations, an arithmetic/memory device

which computes, sums up, and stores the above-mentioned register information, a display device which indicates the above-mentioned register and arithmetic information, a printer which prints out the above-mentioned register and arithmetic information, a magnetic-card processing device which reads out a code number and the cumulative sales from a magnetic card, which records at least a customer code number and the cumulative sales transacted for that customer up to the previous sales, through a magnetic head, and a data-recording device which records the above-mentioned register and arithmetic information so as to keep the register information, such as the above-mentioned customer code number and the sales, recorded in the above-mentioned data processing device.

Detailed explanation of the invention

This invention concerns an electronic cash register which efficiently carries out register transactions while providing a service to a customer (a service in which a store grants gifts to its customers according to the total sales transacted for that customer in a certain period of time).

In stores where electronic cash registers are used to keep sales transactions under control and to issue receipts for each amount of sale to a customer, granting gifts has been widely adopted as a part of the store's service to its customers, according to patronage or the total sales transacted for a customer within a certain period of time (for instance, one year). Conventionally, so-called stub receipts have been used to manage this service. That is, a store issues a customer a stub receipt, which records the customer's code number and the total sales, attached with perforations to the conventional receipt

showing individual amounts of sales classified by department as well as the total sales. The customer detaches the stub receipt from the conventional receipt and gives the stub receipt to the store. When a certain number of stub receipts have accumulated, the store enters the customer's code number and the sales thus accumulated into an electronic cash register used for this specific purpose to obtain and print out the total sales. After entering the data on the printout into a computer, the store then grants a gift to each of its customers according to the total sales thus computed.

However, this conventional method has the following weak points. One serious disadvantage is that not only is a lot of manual labor required to carry out register transactions of many stub receipts gathered for a certain period of time, but also operation errors are likely to occur during the register operations. Also, since the customer code number is registered when issuing a conventional receipt, extra time and labor are used for this transaction, interfering with the smooth operation of issuing the receipt as well as causing errors in the register transaction due to the manual labor employed in registering the customer code number. Also, due to the issuance of the stub receipt, the structure of the cash register becomes complicated and the consumption of paper used to issue the stub receipts increases. In this conventional method, separate operations of each transaction prevents the efficiency of the entire set of transaction procedures.

In consideration of the above-mentioned circumstances, the purpose of this invention is to provide an electronic cash register which can efficiently and reliably carry out register transactions while providing service to the customer (service in

which the store grants a gift to its customers according to the total sales made to that customer in a certain period of time).

The following explains this invention in detail by referring to an application example illustrated in the figures. Figure 1 is a diagonal view of the exterior of the electronic cash register of this invention. (100) is a magnetic card onto which the required information is written, which will be described later. This magnetic card is given in advance to the customer. This magnetic card (100) is inserted into magnetic card read-write device (200) to have its contents read out. The above-mentioned read-write device (200) is electrically connected to electronic cash register main unit (300). Also, read-write device (200) provides the information read out from magnetic card (100) to electronic cash register main unit (300). The above-mentioned cash register main unit (300) consists of an input device which enters register information using key operations, an arithmetic/memory device which computes and stores the above-mentioned register information, a display device which indicates the above-mentioned register and arithmetic information, and a printer which prints out the above-mentioned register and arithmetic information, and is electrically connected to data-storage device (400).

Figure 2 illustrates the organization of magnetic card (100). This magnetic card (100) has printing region (101) which indicates the customer code number, magnetic recording region (102) which records the customer code number, printing region (103), magnetic recording region (104) which indicates the valid time period of the card, magnetic recording region (105) which records the cumulative sales transacted for the customer, magnetic recording region (106) which records the dates on which the register transactions are made, card insertion arrow (107),

customer-name printing region (108), and store-name printing region (109).

As shown in Figures 3 and 4, the above-mentioned card read-write device (200) is arranged with first roller (202) which passes magnetic card (100) to the inside of the device, first pulley (203) fixed to first roller (202), second roller (204) devised at the center of the device, and second pulley (205) fixed to second roller (204). Each of the above-mentioned rollers, (202) and (204), has a counter roller adjacent to it which operates with the rollers when magnetic card (100) is inserted. Electromotive belt (209), wound around the shaft of driving motor (201), is wound around each of the above-mentioned pulleys (203) and (205) through an idle roller to run the pulleys. The slot at which magnetic card (100) is inserted is devised with photocell (210), which detects magnetic card (100) inserted in the direction of arrow (a), and which runs driving motor (201), causing belt (209) to rotate in direction (c). By this movement, magnetic card (100) is sent to the inside of the device, guided by first roller (202), and passes through second roller (204). Magnetic card (100) then passes through inversion roller (207) and reaches microswitch (211), causing this microswitch to operate. By this operation, driving motor (201) is reversed to operate belt (215), which is wound around pulley (203) and fixed to inversion roller (207) and pulley (206) of second pulley (205) and which discharges magnetic card (100) from the magnetic card slot. Also, magnetic heads (212), (213), and (214), which read out and write in information, are arranged adjacent to the top of above-mentioned second roller (204) and are arranged parallel [to each other] so as to have magnetic head (212) facing opposite magnetic recording region (102) for the customer code number, magnetic head (213) opposite magnetic

recording regions (104) and (106), used for the valid time period of the card and the transaction date, and magnetic head (214) opposite magnetic recording region (105) used for the cumulative sales on magnetic card (100). Each of the above-mentioned magnetic heads (212), (213), and (214) reads out the data recorded on magnetic card (100) or writes in data transacted from cash register main unit (300) by making contact with the specified regions of magnetic card (100). Figure 5 shows the keyboard of cash register main unit (300). This keyboard has, in addition to normal keys, magnetic card key (A), the pressing of which operates magnetic card read-write device (200).

The following describes the operation of the electronic cash register of this invention. Magnetic card (100), which is given to the customer in advance, has a code number, which identifies the customer, recorded in magnetic recording region (102) and the cumulative sales transacted for the customer up to the previous sale in magnetic recording region (105). The operator of this electronic cash register receives magnetic card (100) from the customer, inserts it into magnetic card read-write device (200), and then presses magnetic card key (A). Magnetic card read-write device (200) then reads out the customer's code number from magnetic recording region (102) on magnetic card (100) to provide the information to cash register main unit (300), which prints out the customer code number on a receipt and a stub receipt. Magnetic card read-write device (200) also reads out the cumulative sales transacted for the customer up to the previous sales from magnetic recording region (105) on magnetic card (100) to provide the information to cash register main unit (300), which passes the cumulative sales to the arithmetic/memory device for storage. The operator then enters the new sales into the cash register which obtains the total sales through operation of

the arithmetic/memory device. The arithmetic/memory device adds the total sales to the cumulative sales already written. The new total amount of sales thus obtained by the device's addition is passed to magnetic card read-write device (200), which discharges magnetic card (100) after writing in through magnetic head (214) the new total sales obtained by the above-mentioned addition in magnetic recording region (105) on magnetic card (100).

Magnetic card read-write device (200) records, through magnetic head (213), the current date in magnetic recording region (106) of magnetic card (100). The magnetic card read-write device also reads out the valid period code from magnetic recording region (104) on magnetic card (100) to provide the information to cash register main unit (300). Cash register main unit (300) then determines the validity of the magnetic card in order to regulate the operation, that is, to continue to register transactions if the card is valid or to stop further transactions if the card is invalid. When the card is determined to be invalid, the cash register warns the operator with something such as a buzzer or blinking light.

The above-mentioned data-recording device (400) consists of magnetic tapes or semiconductor memories which record information provided by cash register main unit (300). Thus, information such as the customer code number and read out from magnetic card (100) is provided to data-recording device (400) through cash register main unit (300). The operator retrieves the total sales transacted for one customer during a certain period of time (for instance, one year) from data-recording device (400). The operator then inputs the total sales for each customer to a computer equipped in the main data processing center which stores the information. When the store needs to provide the service to its customers, the operator of the cash register outputs from the

computer the information to be used as the information resource in granting gifts to a customer according to the total sales transacted for that customer during a certain period of time.

It should be noted that data-recording device (400) has a limited information-storage capacity. Thus, a beginning mark and an end mark are made on the magnetic tape, for instance, to indicate the beginning and the end of the magnetic tape stored in data-recording device (400). If the end mark of the magnetic tape is detected, the transaction operation stops. A warning for this stop is issued to the operator by something such as a buzzer or a blinking light.

As explained above, this invention allows the operator of this cash register to simply insert a magnetic card into the card-processing device without having to resort to various key operations because the information such as the customer code number written in the magnetic card, which is given to a customer in advance, is read out by the magnetic-card processing device as well as printed out by a printer. Therefore, register transactions can be carried out efficiently, and the problems caused by operation errors can be prevented. Since the cumulative sales up to the previous sale, read out from the magnetic-card processing device, are stored in the arithmetic/memory device, which adds the new total sales to the previous cumulative sales when new sales are obtained and which records the newly added total sales on the magnetic card, it is no longer necessary to gather and sum the sales transacted for one customer. Thus, the efficiency of the register-transaction procedures is dramatically improved and no problems due to operation errors can occur. Moreover, the register transaction is no longer interfered with, even if a customer loses his/her

magnetic card, because the information recorded on the magnetic card is written in the data-recording device.

Brief explanation of the figures

The figures show an application example of the electronic cash register of this invention. Figure 1 is a diagonal view of the exterior of the electronic cash register. Figure 2 shows a bird's-eye view of a magnetic card. Figure 3 is a cross section illustrating the outline of the magnetic card read-write device. Figure 4 shows a plan of the magnetic card read-write device in Figure 3. Figure 5 shows the keyboard of the electronic cash register.

100...magnetic card, 200...magnetic card read-write device,
300...cash register main unit, 400...data recording device,
102...magnetic recording region for a customer code number,
105...magnetic recording region for the cumulative sales
transacted for one customer, 212, 213, 214...magnetic heads,
A...magnetic card key.

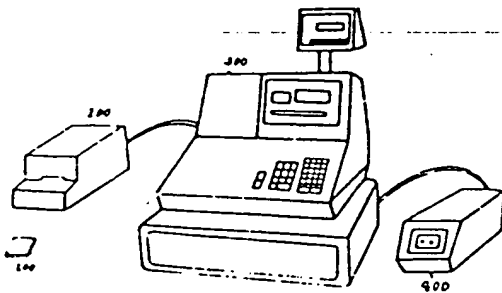


Figure 1

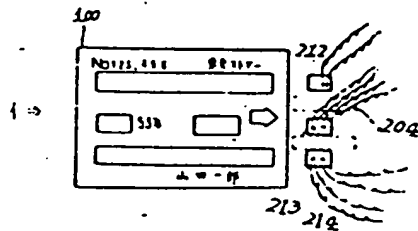


Figure 4

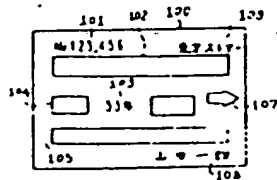


Figure 2

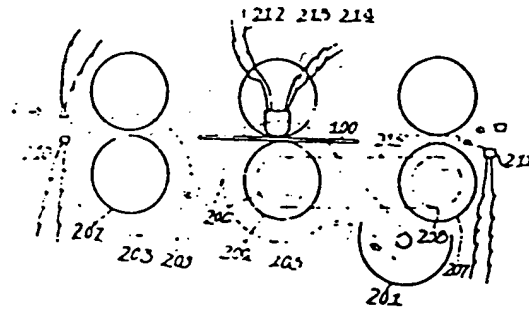


Figure 3

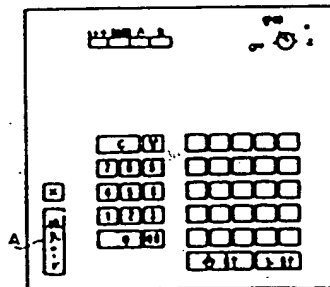


Figure 5

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